

MIS

(Management Information System)

Sharif University of Technology

Session # 3



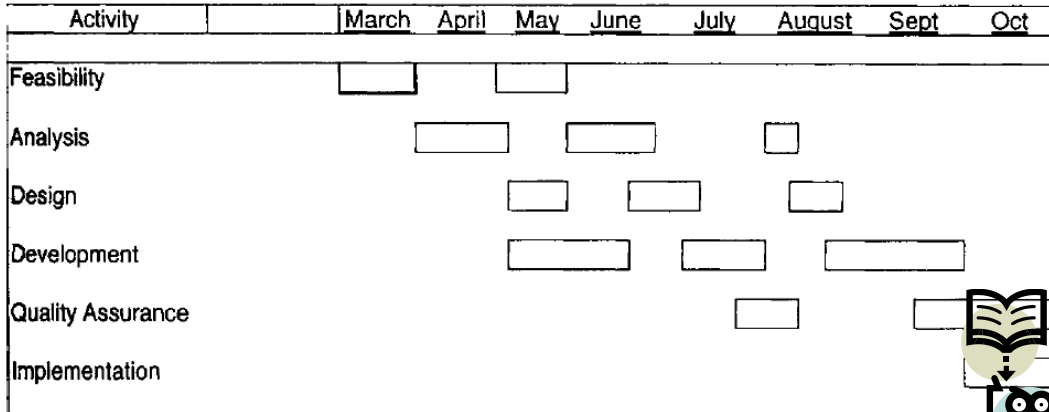
Session schedule

- *Contents*
 - *Systems Analysis and Design*



Information system development

- Information system development project
 - Realistic behavior

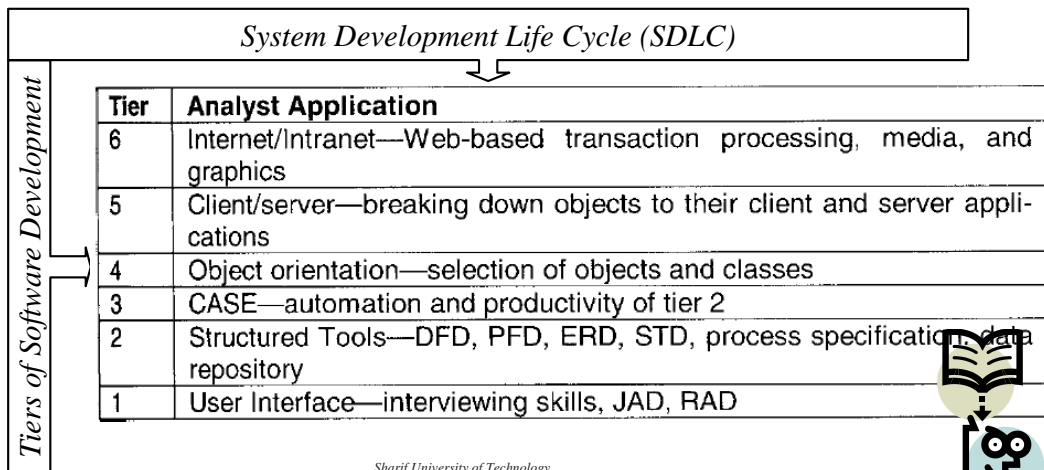


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Information system development

- Information system development project



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Information system development

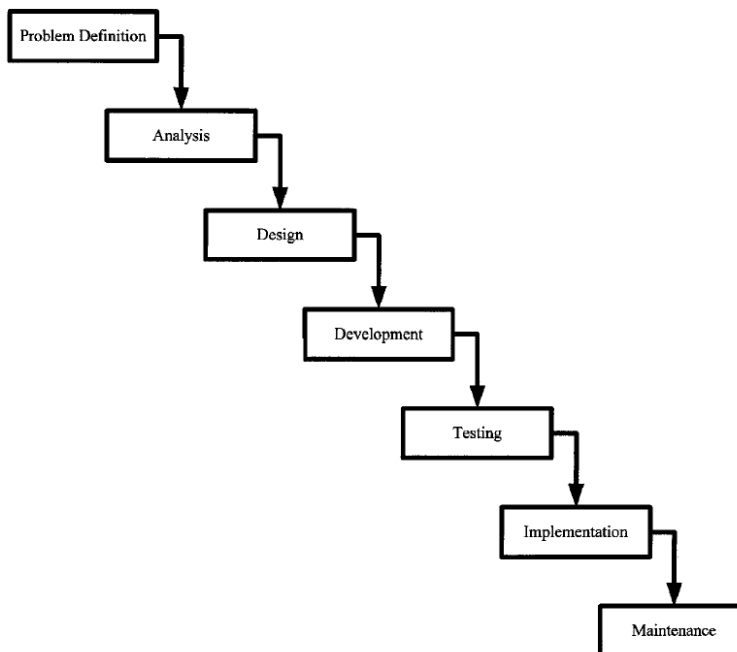
- **System Development Life Cycle (SDLC)**
 - *The basis for most systems analysis and design methodologies is the system development life cycle or SDLC.*
 - *It is sometimes called the waterfall method because the model visually suggests work cascading from step to step like a series of waterfalls.*
 - *In reality, there is considerable feedback between the various steps or phases.*



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▪ SDLC

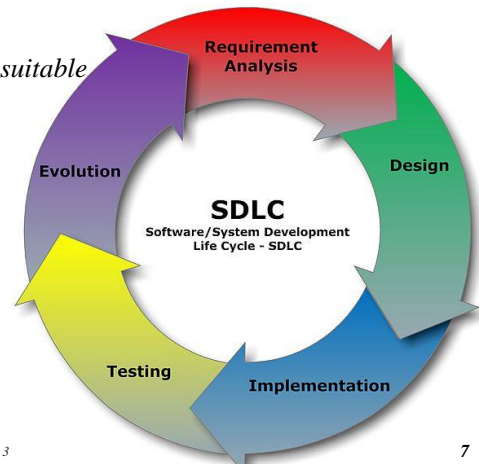


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Information system development

- *Information system development Methodologies*
 - *Several models exist to streamline the development process.*
 - *Sometimes a combination of the models may be more suitable*
 - *Waterfall model*
 - *Unified software development Process model*
 - *Spiral model*
 - *Agile development*
 - *Rapid application development*

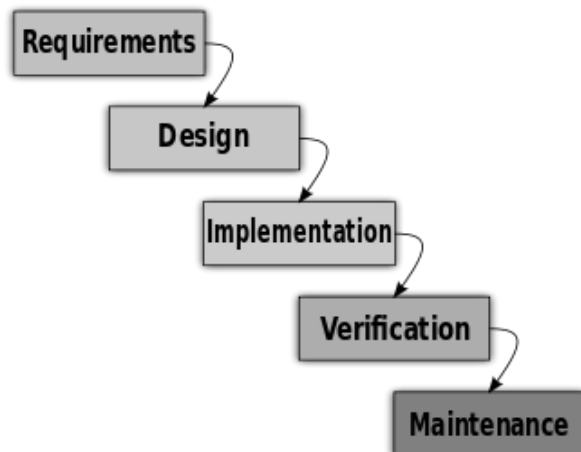


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Information system development

- *Information system development Methodologies*
 - *Waterfall model*
 - *The waterfall model is a sequential design process*
 1. *Requirements specification*
 2. *Design*
 3. *Construction (implementation or coding)*
 4. *Integration*
 5. *Testing and debugging*
 6. *Installation*
 7. *Maintenance*



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Information system development

▪ *Information system development Methodologies*

▪ *Waterfall model*

- *The waterfall model maintains that one should move to a phase only when its preceding phase is completed and perfected.*
- *Time spent early on making sure requirements and design are correct saves much time and effort later*
- *Waterfall model places emphasis on documentation (such as requirements documents and design documents) as well as source code.*
- *Waterfall model for is a simple approach and is more disciplined.*

Information system development

▪ *Information system development Methodologies*

▪ *Waterfall model*

- *Waterfall model is a bad idea in practice*
- *It is impossible to finish a phase of a software product's lifecycle perfectly before moving to the next phases and learning from them*
- *Many of the system's details only become known to us as we progress in the system's implementation.*
- *Some of the things that we learn invalidate our design and we must backtrack*

Information system development

Information system development Methodologies

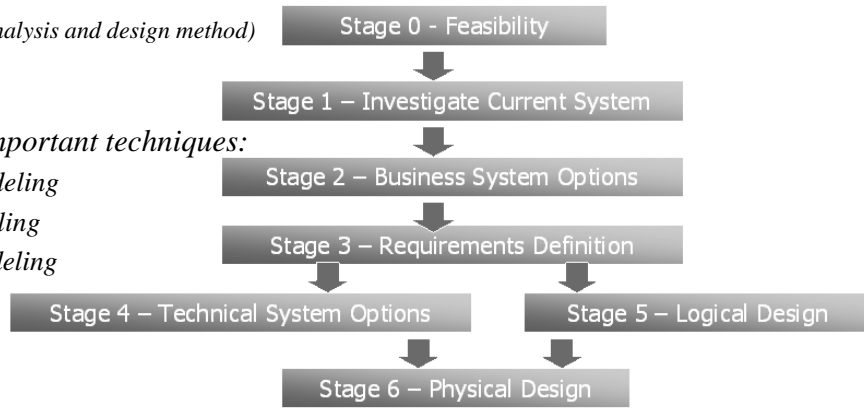
- SSADM

(Structured systems analysis and design method)

SSADM techniques

- The three most important techniques:

- Logical data modeling
- Data Flow Modeling
- Entity Event Modeling



Structured Systems Analysis and Design Method (SSADM)

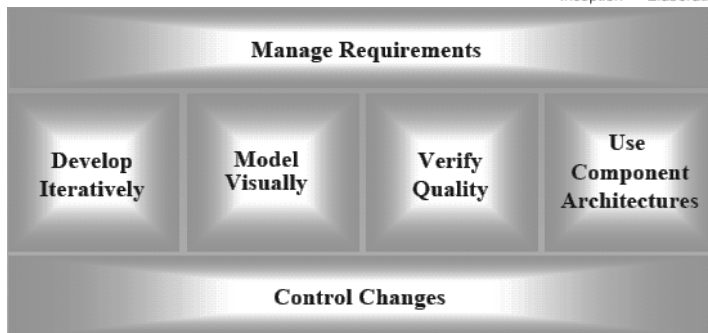
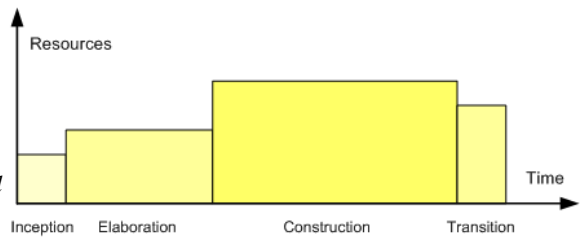
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Information system development

Information system development Methodologies

- USDP model

- The USDP is a popular iterative and incremental software development process framework.



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Information system development

Information system development Methodologies

- *USDP model*
 - *Iterative and Incremental*
 - *Use Case Driven*
 - *Architecture Centric*
 - *Risk Focused*



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Information system development

Information system development Methodologies

- *RUP (Rational Unified Process) is a specific implementation of the USDP.*
- *RUP is based on a set of building blocks, or content elements, describing*
 - *what is to be produced,*
 - *the necessary skills required*
 - *and the step-by-step explanation describing how specific development goals are to be achieved.*
- *The main building blocks, or content elements, are the following:*
 - *Roles (who) – A Role defines a set of related skills, competencies and responsibilities.*
 - *Work Products (what) – A Work Product represents something resulting from a task, including all the documents and models produced while working through the process.*
 - *Tasks (how) – A Task describes a unit of work assigned to a Role that provides a meaningful result.*

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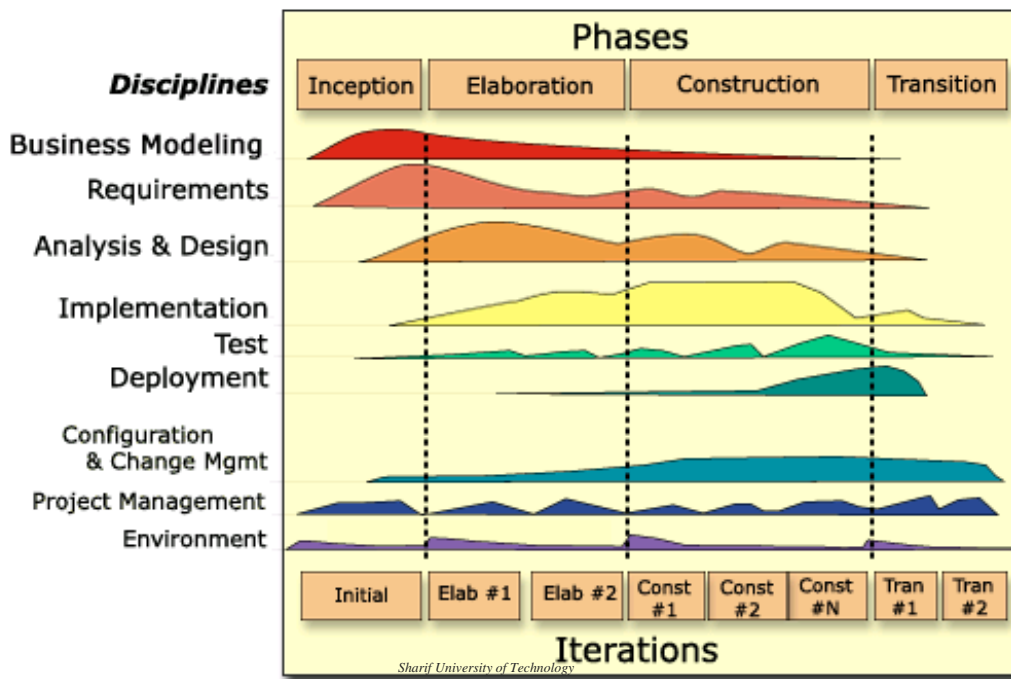
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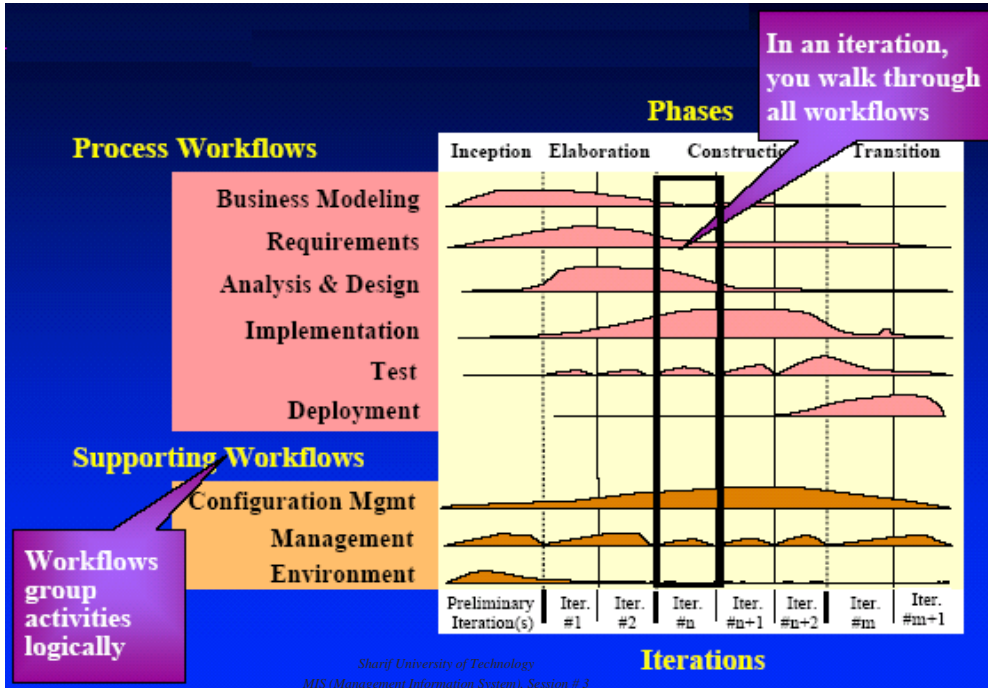
- Information system development Methodologies
 - RUP (Rational Unified Process)
 - Within each iteration, the tasks are categorized into nine disciplines:
 - Six "engineering disciplines" Business Modeling
 - Requirements
 - Analysis and Design
 - Implementation
 - Test
 - Deployment
 - Three supporting disciplines
 - Configuration and Change Management
 - Project Management
 - Environment

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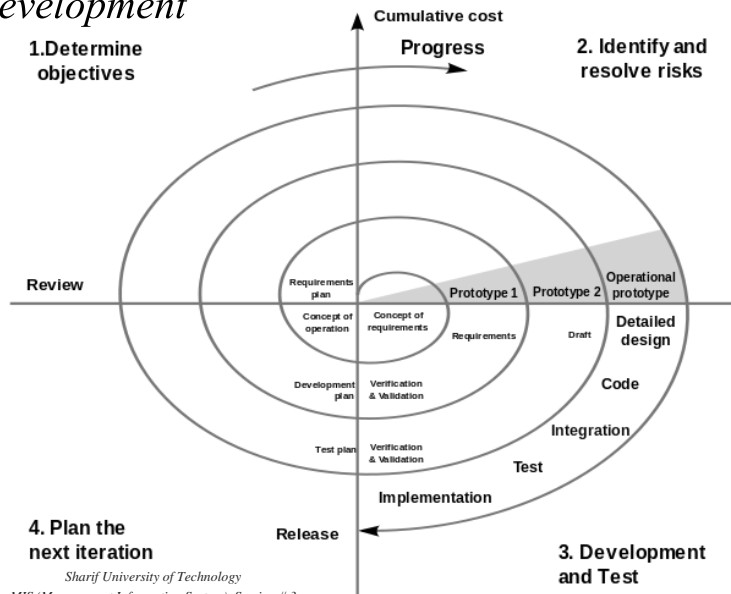
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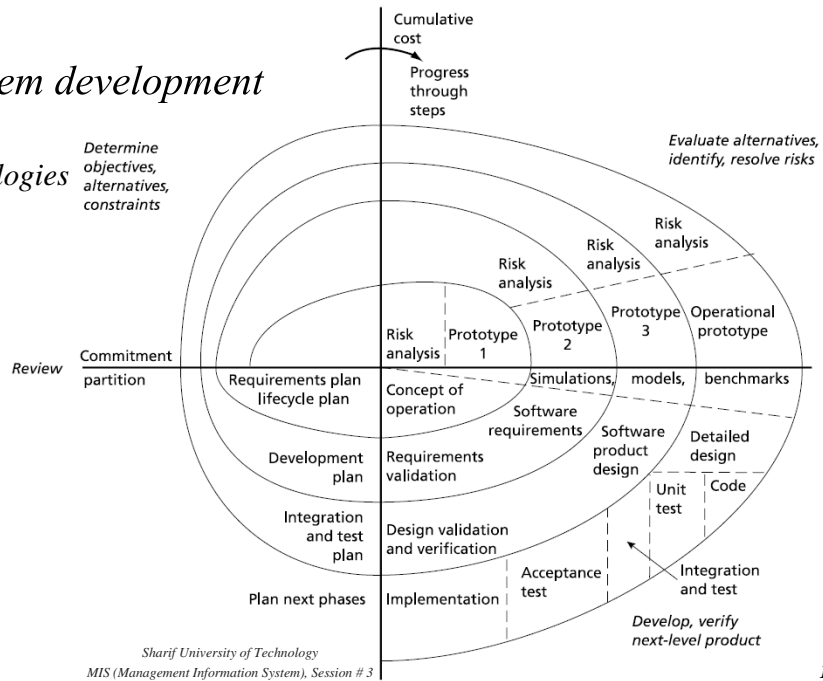
- Information system development Methodologies
 - Spiral model
 - The spiral model combines elements of both design and prototyping-in-stage.
 - Spiral model combines advantages of top-down and bottom-up concepts.



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Information system development

- Information system development Methodologies
 - Spiral model



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Information system development

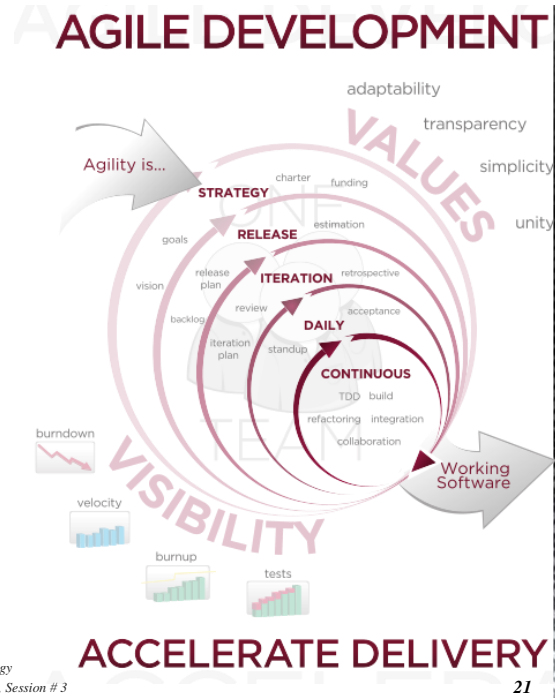
- Information system development Methodologies
 - Spiral model

- The spiral model combines the idea of iterative development with the systematic, controlled aspects of the waterfall model.
- The spiral model is based on continuous refinement of key products for requirements definition and analysis, system and software design, and implementation (the code).
- Documents are produced when they are required, and the content reflects the information necessary at that point in the process.
- Spiral model forces early user involvement in the system development effort.

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Information system development

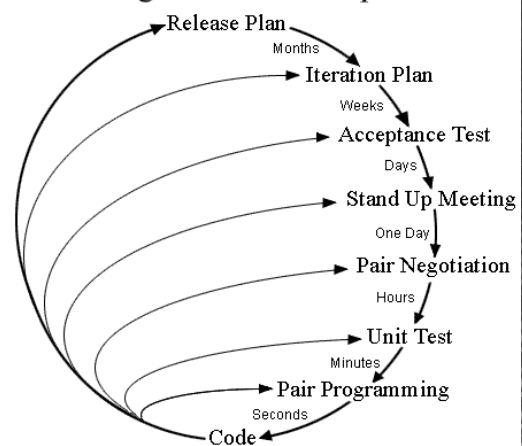
- Information system development Methodologies
 - Agile software development
 - Agile software development is a group of software development methods based on iterative and incremental development, where requirements and solutions evolve through collaboration between self-organizing, cross-functional teams.
 - It promotes adaptive planning, evolutionary development and delivery, a time-boxed iterative approach.



Information system development

- Information system development Methodologies
 - Agile software development methods
 - Agile Unified Process (AUP)
 - Crystal Clear
 - Crystal Methods
 - Dynamic Systems Development Method (DSDM)
 - Extreme Programming (XP)
 - Feature Driven Development (FDD)
 - Lean software development

Planning/Feedback Loops



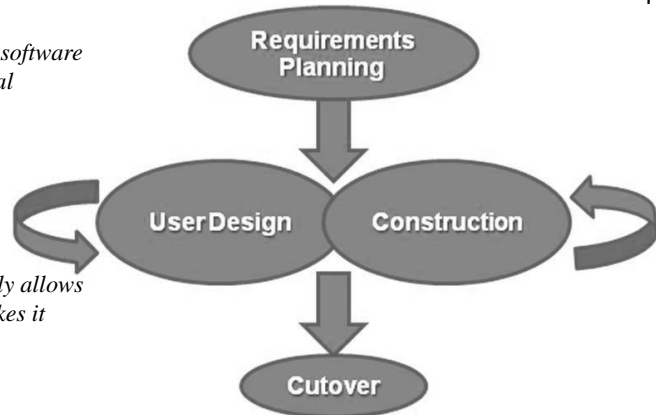
Information system development

Information system development Methodologies

Rapid Application development

- Rapid application development (RAD) is a software development methodology that uses minimal planning in favor of rapid prototyping.

- The lack of extensive pre-planning generally allows software to be written much faster, and makes it easier to change requirements.



Rapid Application Development (RAD)

Information system development

Information system development Methodologies

- Rapid Application development
 - Requirements Planning phase
 - User design phase
 - Construction phase
 - Cutover phase